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A Datataker Format PCMCIA Card
Converter for the Amiga Computer
Version 1.00: Users Manual

Grant Gamble

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A Datataker Format PCMCIA Card Converter for the Amiga Computer Version 1.00: Users Manual

Grant Gamble

**Ship Structures and Materials Division
Aeronautical and Maritime Research Laboratory**

DSTO-GD-0058

ABSTRACT

This document forms the instruction manual for the software, called Card Converter, which enables the fast retrieval of data written to PCMCIA cards by Data Electronics Data Loggers.

The memory of the Datataker 500 can be considerably enhanced by the insertion of a PCMCIA card.

Uploading 512 kilobytes of data as an ASCII file from a card using a serial port at 4800 baud takes 40 minutes.

Using the Card Converter program, the same data can be uploaded to a Commodore Amiga 1200 computer as an image file in 5 seconds or as an ASCII file in 3 minutes.

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A Datataker Format PCMCIA Card Converter for the Amiga Computer Version 1.00: Users Manual

Executive Summary

The memory of a Data Electronics Datataker data loggers can be considerably enhanced by the insertion of a PCMCIA (Personal Computer Memory Card International Association) card. However, uploading 512 kilobytes of data from a PCMCIA card written to by a Datataker 500 to the hard disk of a computer as an ASCII file using a serial port at 4800 baud takes 40 minutes.

The Aeronautical and Maritime Research Laboratory had a requirement for a fast method of transferring data to a computer so that one set of PCMCIA cards could be used for a number of experiments in a limited period of time.

The computer program, Card Converter, runs on Commodore Amiga computers equipped with a PCMCIA slot and was written to enable the fast retrieval of data from PCMCIA cards written to by Data Electronics data loggers. Uploading 512 kilobytes of data from a PCMCIA card to the hard disk on a Commodore Amiga 1200 computer as an ASCII file takes 3 minutes, and as an image file takes 5 seconds.

The Card Converter program allows a fast retrieval of data from Datataker format PCMCIA cards and therefore more experiments may be completed during a set time using a minimum number of PCMCIA cards.

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1. Introduction

The Data Electronics Datataker series of data loggers provides a convenient way of sampling and storing analog data. However, the Datatakers have a limited amount of internal memory. This restricts the amount of data that can be stored and later moved to a computer for analysis. The Datataker provides larger data storage via a PCMCIA (Personal Computer Memory Card International Association) card connector. PCMCIA cards of various memory capacities can be written to by the Datataker data loggers. These cards contain a battery and can therefore be removed and stored, without data loss, until needed for analysis. At the time of writing this document, data from a PCMCIA card is transferred to a computer using a serial line between a Datataker and IBM compatible computer, a process which can take up to 40 minutes for a full 512 kilobyte card.

The Aeronautical and Maritime Research Laboratory had a requirement for a fast method of transferring data stored on PCMCIA cards so that the cards could be re-used immediately and a brief analysis carried out before further data logging. The Commodore Amiga 600 and 1200 computers are equipped with a PCMCIA card slot, and are thus ideally suited for fast uploading of data from PCMCIA cards. Using the Card Converter program, the same data that took 40 minutes to load can be loaded to an Amiga 1200 computer as an image file in 5 seconds or as an ASCII file in 3 minutes.

This document forms the instruction manual for the software developed by the Aeronautical and Maritime Research Laboratory for the fast retrieval of data written to PCMCIA cards by Data Electronics Datataker data loggers.

The following trademarks and tradenames are mentioned in this manual, and describe products used in conjunction with the Card Converter program.

Amiga, Amiga 600, Amiga 1200 and AmigaDOS are trademarks of Commodore-Amiga Inc.
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2. The Card Converter Program

2.1 System Requirements

The Card Converter program may be run on any Commodore Amiga computer running version 2.0 or higher of the Amiga operating system AmigaDOS. The PCMCIA card features can only be used on models with a PCMCIA card slot, which at the time of writing this manual are the Amiga 600 and 1200.

2.2 Starting the Program

The Card Converter program is started by moving the mouse pointer over the Card Converter icon and double clicking the mouse (clicking the left mouse button twice). The program interface consists of a number of buttons (known as gadgets) and pull down menu items. The main program window can be seen in Figure 1.

A gadget is selected by moving the mouse pointer over it and pressing the left mouse button once. A menu item is selected by holding the right mouse button down, moving the mouse pointer to the upper left hand corner of the screen, across to the menu required, down to the item and releasing the mouse button.

2.3 Selecting Data Media

The media gadget (shown in Figure 1, with the caption 'Card') toggles between 'Card' and 'File'. The 'Card' option is selected when the data on a PCMCIA card is to be uploaded. The 'File' option is selected when a previously stored card image file is to be converted from the Data Electronics format to an ASCII format suitable for loading into other software such as a spreadsheet.

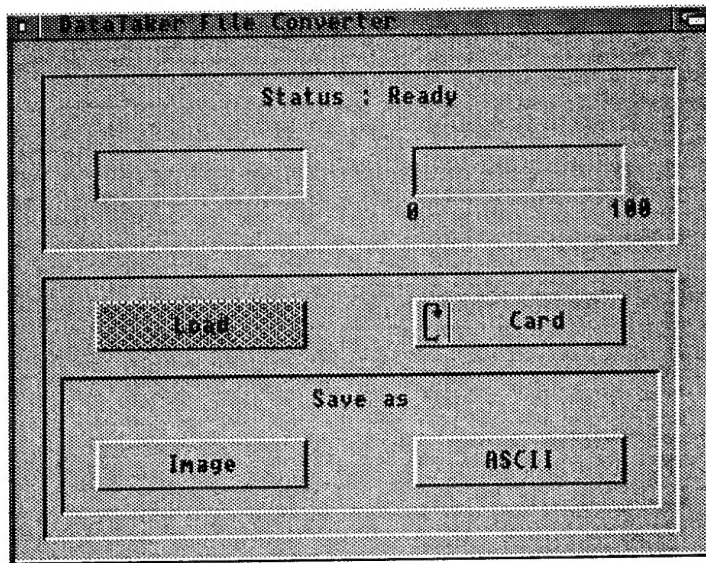


Figure 1. Card Converter main window

2.4 Uploading from a PCMCIA Card

The PCMCIA slot is located on the left hand side of both the Amiga 600 and 1200 models. Prior to inserting a PCMCIA card the 'write protect' tab should be set to avoid accidental erasing of data on the card. Cards may be inserted or removed at any time except when the Card Converter program is reading from one. When the 'Card' option is selected, the program will expect a PCMCIA card to be inserted into the PCMCIA slot on the Amiga computer. The size of the card will be displayed in the size box (located in the upper left hand corner of the main program window). If there is no card inserted, or the computer being used has no card slot, when one of the 'Save As' gadgets is selected, an error message will be displayed at the top of the program window.

The two gadgets available in the 'Save As' box permit the user to save the data on the PCMCIA card to disk as either a PCMCIA card image file or an ASCII file. During the transfer of data from PCMCIA card to disk a 'fuel gauge' will show the percentage complete. This may be seen in Figure 2.

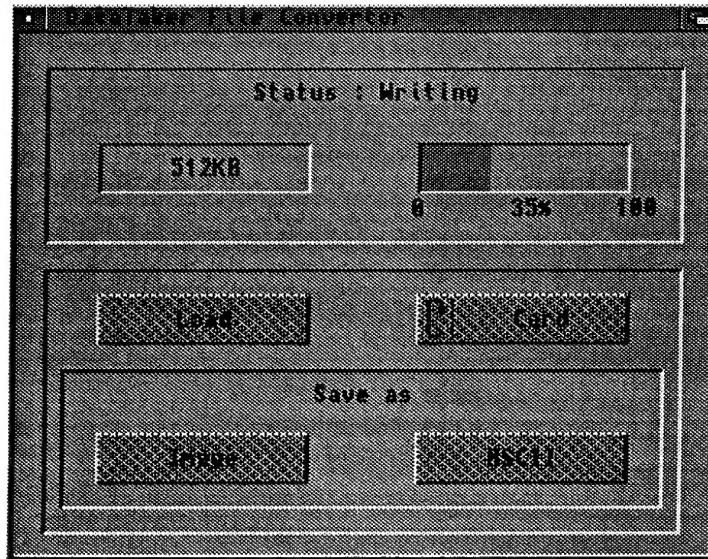


Figure 2. The Card Converter window while uploading data

2.4.1 Uploading Data as a Card Image File

The 'Image' gadget prompts the user for a file name to save an exact image of the PCMCIA card to disk (see Figure 3). That is, no conversion of the data is carried out, so that a 512 kilobyte card will have a 512 kilobyte file created. The creation of such a file has a number of advantages:

- the creation of an image file is very fast (it takes just a few seconds) and data from many cards may be saved quickly, allowing them to be re-used in a Datataker immediately
- the data file in this format will take a known amount of disk space (the memory size of the card) whereas a converted file uses disk space proportional to the number of points stored on the card which, if near the limit of the card, will be larger than the image file
- the image file may be stored on disk and converted by the Card Converter program at a later time.

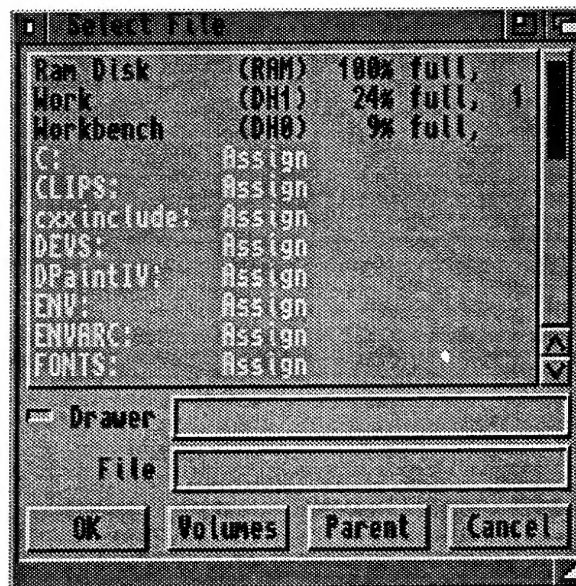


Figure 3. The Amiga file requestor is opened when the Card Converter program requires a file name

2.4.2 Uploading Data as an ASCII File

The 'ASCII' gadget will convert the data on the PCMCIA card to an ASCII file, which can be imported into other software, such as a spreadsheet. When this gadget is selected, the user is prompted to supply a file name to save the data under.

Uploading data as an ASCII file takes longer than uploading data as a card image file, and depends on the number of data points stored on the card, and the type of disk being written to. However, a full 512 kilobyte card will take approximately 3 minutes to be written to a hard disk on an Amiga 1200.

2.4.3 Converting a PCMCIA Card Image File to an ASCII File

When the 'File' option is selected, the user must load a PCMCIA image file from disk using the 'Load' gadget. Selection of the load gadget will prompt the user for a file name. If the file selected is not a valid data file then an error message will be displayed at the top of the program window. Otherwise the program will load the file and display its size in the size box. The 'ASCII' gadget then becomes available to the user for converting the image file to a more useable ASCII file. If the 'ASCII' option is selected the program will begin to decode the data file, with the percentage complete shown in both text and graphical form.

2.5 ASCII Data File Format

The ASCII file contains a header block and a data block. The header consists of the following information:

- the PCMCIA card name, a name entered by the user using Data Electronics DeTerminal[1] program (Datataker control software which runs on IBM compatible computers)
- the number of free data points on the card
- the number of used data points on the card
- the date and time of the first data point stored on the card
- the date and time of the last data point stored on the card
- the schedules used to store data on the card (the command strings used to control and log Datataker channels)
- the initial time interval between scans.
- the number of schedules used on the card
- the number of data points contained in each schedule

The Datataker has a number of channels from which data can be logged from a combination of sensors (thermocouples for example). The commands controlling which channels to log, and which time intervals to log them at, are known as schedules. The data is stored in an ASCII file as a number of data points per line, corresponding to a Datataker schedule command, with each data point separated by a delimiter character (see Menu Options below). This allows simple insertion into a spreadsheet or other software.

An example ASCII data file is shown below, including the header information and a section of data.

```
Card Name       : 512KB Card
Free Data Points : 15477
Used Data Points : 153783
Start Time      : Sat Jan 01 00:00:40 1994
Time of Last Scan : Tue Jan 04 22:56:00 1994
```

```
T 9V 10V 1..4V 1:1TK
```

```
20S
```

```
Number of schedules : 1
Number of points per schedule : 9
```

```
0,1002.156,1002.453,2982.187,2984.375,2979.687,2809.000,22.5
20,1002.156,-1002.453,2973.250,2985.625,2983.687,2806.562,22.5
40,1002.156,-1002.453,2978.812,2981.625,2982.875,2809.812,22.7
60,1002.156,-1002.453,2978.937,2984.437,2977.187,2809.187,22.8
80,1002.156,-1002.453,2985.250,2982.875,2989.437,2809.375,22.9
100,1002.266,-1002.453,2982.437,2982.375,2984.312,2584.937,23.0
120,1002.156,-1002.453,14.618,2986.312,2990.125,2384.250,23.0
...
```

2.6 Menu Options

A number of menu items are available to the user for selecting options in the Card Converter program.

Firstly, the 'Project' menu contains the items 'About' and 'Quit'. The 'About' option opens a window showing information about the program, including the version number. This window may be closed by selecting its closewindow gadget located in the upper left corner of the window, or left open to be closed by the program when quitting the program. Note that this window, along with the program window may be 'pushed back' behind other windows by selecting the windowback gadget located in the upper right hand corner of the window. The 'Quit' option closes the Card Converter program, releasing all resources used by it back to the operating system. Figure 4 illustrates the 'Project' menu and the 'About' window.

Secondly, the 'Control' menu contains the items 'Time', 'Delimiter', 'Time data format', and 'Save image with ASCII', which may be seen in Figure 5.

The 'Time' option contains two submenu choices of 'None' and 'Seconds from zero'. This allows the user to include the schedule time (the time starting from zero from the first data point logged) as the first item in each line of data in any 'ASCII' data files produced. Logging time is an option in the DeTerminal[1] program, and uses extra memory on the card. The Card Converter method is useful where time isn't logged as it uses timing information automatically written to the card during data logging.

The 'Delimiter' option gives the user a choice of delimiter characters separating data in ASCII files produced by the Card Converter program. Currently there is a choice between a comma (,) and a space ().

The 'Time data format' option enables the user to choose the format of any retrieved time data (logged to a card). The 'Absolute' format will return time format as a number between 0 and 86399 (the time in seconds from midnight). The 'Clock' format will return a 24 hour clock time (for example 13:25:01).

The 'Save image with ASCII' option allows for the automatic saving of a PCMCIA card image file when uploading data from a card to an ASCII file. The image file will have the same name as the ASCII file, with a '.img' extension, and be written to the same directory as the ASCII file.

The 'Time', 'Delimiter', 'Time data format' and 'Save image with ASCII' options may be changed while the program is running, but will only take effect on the next ASCII file produced.

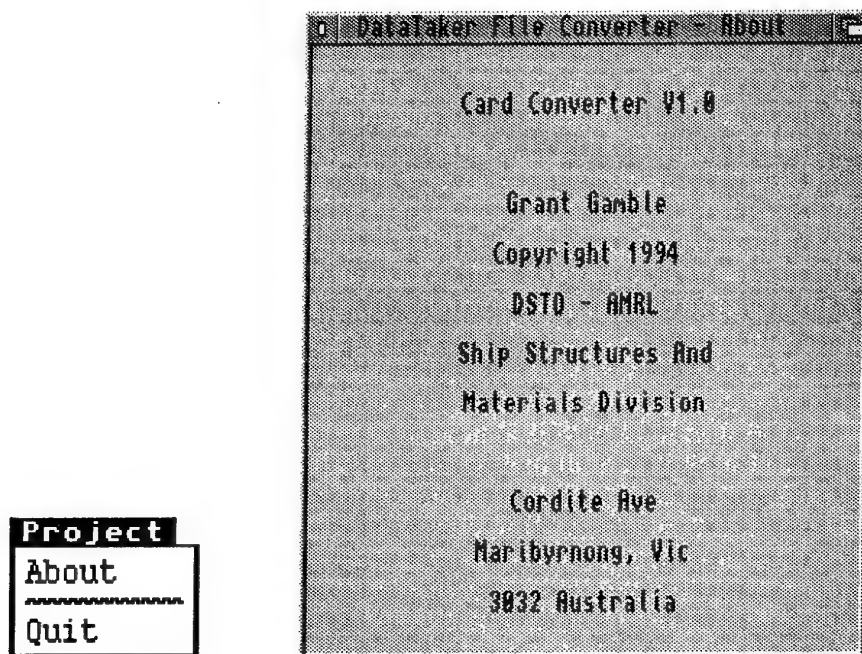


Figure 4. The 'Project' menu and the 'About' window

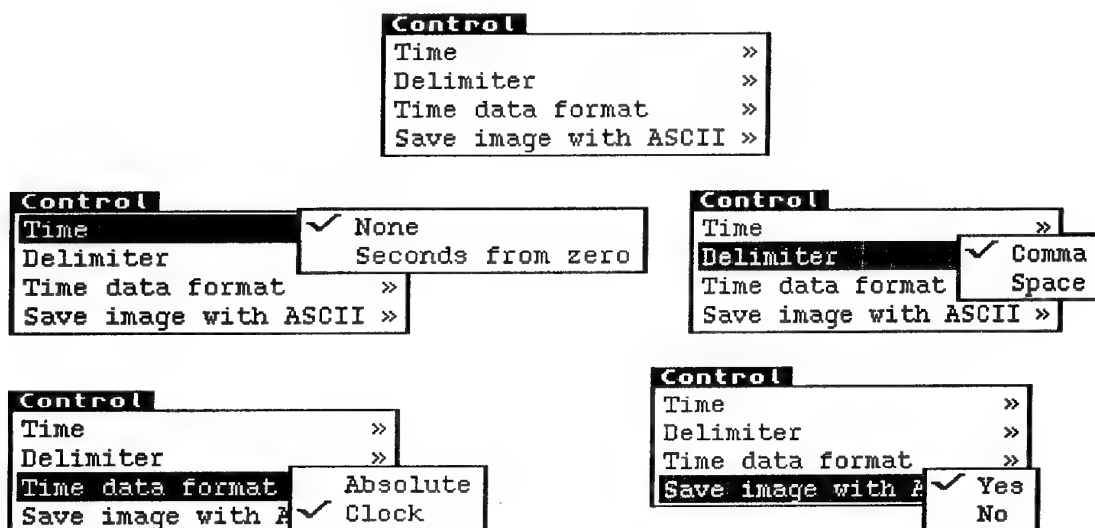


Figure 5. The 'Control' menu

2.7 Quitting the Program

Two methods are available for quitting the program. The first is to select the 'Quit' option from the 'Project' menu as described in the 'Menu Options' section above. The second method is to select the closewindow gadget located in the upper left corner of the window.

3. Acknowledgements

The author acknowledges the assistance given in writing the Card Converter program by the following:

- Data Electronics (Aust) Pty Ltd. for details on Datataker PCMCIA card data format.
- Dr. Peter Lambrineas (Aeronautical and Maritime Research Laboratory) for corresponding with Data Electronics (Aust) Pty Ltd., programming suggestions and providing data for testing the Card Converter program.
- Dr. Stephen Kennett (Aeronautical and Maritime Research Laboratory) for programming suggestions.

4. References

1. 'Reference Manual for the Datataker Data Loggers', Data Electronics (Aust) Pty Ltd., 1993.
2. 'Datataker Memory Card Reader and Programmer - User's Guide', Data Electronics (Aust) Pty Ltd., 1992.
3. 'Commodore Amiga A1200 - User's Guide', Commodore Electronics Ltd., 1993.
4. 'Commodore Amiga Workbench 3.0 - User's Guide', Commodore Electronics Ltd., 1992.

Appendix A

The procedure for uploading data from a Data Electronics Datataker format PCMCIA card to a Data Electronics Datataker format PCMCIA card image file on an Amiga computer is as follows:

Step	Notes
1. Double click the 'Card Converter' icon	This starts the program. A window titled 'Datataker File Converter' will be displayed. (Section 2.1-2.2, Figure 1)
2. Write protect PCMCIA card	Move the tab on the card to the write protect position. (Section 2.4)
3. Insert PCMCIA card into computer	The PCMCIA card slot is on the left hand side of the Amiga 600 and Amiga 1200. (Section 2.4)
4. Select 'Card' from the media gadget	This instructs the program to read from a PCMCIA card. (Section 2.3)
5. Select 'Image' gadget	The 'Image' gadget saves the data to a file as an exact copy (or image) of the PCMCIA card. (Section 2.4, 2.4.1)
6. Provide a file name using the file requestor	The data file is saved under this name. (section 2.4, 2.4.1, Figure 3)
7. Wait until the program has finished reading from the card	The program will display 'Status : Ready' when it has finished reading from the card. (Section 2.4, 2.4.1, Figure 2)
8. Remove the PCMCIA card from the computer	(Section 2.4)
9. Quit the program	Select 'Quit' from the 'Project' menu or click the window close gadget. (Section 2.6-2.7, Figure 4)

Appendix B

The procedure for uploading data from a Data Electronics Datataker format PCMCIA card to an ASCII file on an Amiga computer is as follows:

Step	Notes
1. Double click the 'Card Converter' icon	This starts the program. A window titled 'Datataker File Converter' will be displayed. (Section 2.1-2.2, Figure 1)
2. Write protect PCMCIA card	Move the tab on the card to the write protect position. (Section 2.4)
3. Insert PCMCIA card into computer	The PCMCIA card slot is on the left hand side of the Amiga 600 and Amiga 1200. (Section 2.4)
4. Select 'Card' from the media gadget	This instructs the program to read from a PCMCIA card. (Section 2.3)
5. Select 'ASCII' gadget	The 'ASCII' gadget saves the data to a readable ASCII format file. (Section 2.4, 2.4.2)
6. Provide a file name using the file requestor	The data file is saved under this name. (Section 2.4, 2.4.2, Figure 3)
7. Wait until the program has finished reading from the card	The program will display 'Status : Ready' when it has finished reading from the card. (Section 2.4, 2.4.2, Figure 2)
8. Remove the PCMCIA card from the computer	(Section 2.4)
9. Quit the program	Select 'Quit' from the 'Project' menu or click the window close gadget. (Section 2.6-2.7, Figure 4)

Appendix C

The procedure for converting a Data Electronics Datataker format PCMCIA card image file to an ASCII file on an Amiga computer is as follows:

Step	Notes
1. Double click the 'Card Converter' icon	This starts the program. A window titled 'Datataker File Converter' will be displayed. (Section 2.1-2.2, Figure 1)
2. Select 'File' from the media gadget	This instructs the program to read from a PCMCIA card image file. (Section 2.3)
3. Select the 'Load' gadget	(Section 2.4.3, Figure 1)
4. Select the name of the image file using the file requester	(Section 2.4.3, Figure 3)
5. Press the 'ASCII' gadget	The 'ASCII' gadget saves the data to a readable ASCII format file. (Section 2.4, 2.4.3)
6. Provide a file name using the file requestor	The data file is saved under this name. (Section 2.4, 2.4.3, Figure 3)
7. Wait until the file is written	The program will display 'Status : Ready' when it has finished reading from the card. (Section 2.4, 2.4.3, Figure 2)
8. Quit the program	Select 'Quit' from the 'Project' menu or click the window close gadget. (Section 2.6-2.7, Figure 4)

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20. ABSTRACT <p>This document forms the instruction manual for the software, called Card Converter, which enables the fast retrieval of data written to PCMCIA cards by Data Electronics Data Loggers.</p> <p>The memory of the Datataker 500 can be considerably enhanced by the insertion of a PCMCIA card.</p> <p>Uploading 512 kilobytes of data as an ASCII file from a card using a serial port at 4800 baud takes 40 minutes.</p> <p>Using the Card Converter program, the same data can be uploaded to a Commodore Amiga 1200 computer as an image file in 5 seconds or as an ASCII file in 3 minutes.</p>					